(see Section 2.3.2.1). From 1970 through 1980, Congress promulgated the following additional major environmental statutes:

- Resource Conservation and Recovery Act (1972);
- Marine Protection, Research, and Sanctuaries Act (1972);
- Clean Water Act (1972, 1977) (see Section 2.3.2.1);
- Endangered Species Act (1973) (see Section 2.3.2.1);
- Safe Drinking Water Act (1974);
- Toxic Substances Control Act (1975);
- Coastal Zone Management Act (1976);
- Hazardous Materials Transportation Act (1977);
- Clean Air Act (1977);
- Fish and Wildlife Conservation Act (1980); and
- Comprehensive Environmental Response, Compensation and Liability Act (1980).

Together with ocean harvest reforms adopted in the Magnuson Fishery Conservation and Management Act (1976), the United States-Canada Pacific Salmon Treaty (1985), and the *U.S. v. Oregon* treaty rights case (1968), a substantial number of environmental rules and regulations with which to protect and enhance fish and wildlife, including Columbia River anadromous fish, had been established.

2.3.2 Recent Developments: The Period of "Equitable Treatment" for Fish and Wildlife (1980—2002)

By 1980, it was accurate to say that Columbia River fish and wildlife policy was in many respects dictated by Federal statutes and the implementing policies and regulations. Crucial decisions, especially those involving the Columbia River hydropower system, were made by Congress, Federal agencies, and the Federal courts. In 1980, Congress passed the Regional Act, which provided "equitable treatment" for fish and wildlife. Federal, state, tribal, and local governments, and citizen efforts to recover salmon populations accelerated in the 1990s. The first significant event was the Northwest Salmon Summit, convened in 1990 to address the problem of declining salmon stocks. The intent was to reach a consensus among diverse Northwest interests to formulate a plan to reverse this trend. Unsuccessful in being able to reach a consensus on a comprehensive plan of action, however, it was successful in bringing a diverse group together to address salmon issues and commit to continue efforts to rebuild depleted salmon stocks. These efforts continued through the 1900s and continue today.

2.3.2.1 Primary Federal Statutes

Several environmental statutes—the National Environmental Policy Act, the Clean Water Act, Endangered Species Act—and the Pacific Northwest Electric Power Planning and

Conservation Act (Regional Act) had enormous influence on regional decisionmaking. Two of the Acts were passed in the early 1970s, but their impacts were not realized until the 1980s. The intent and consequences of these statutes and related decisions are now an integral component of regional fish and wildlife policy. While these statutes are but three of the many statutes defining BPA's legal responsibilities, they tend to be the most commonly discussed with respect to fish and wildlife mitigation and recovery issues. Accordingly, a brief summary is provided here.[45]

The National Environmental Policy Act of 1969

In 1969 Congress declared the nation's environmental policy when it passed the National Environmental Policy Act (NEPA). Concerned with the impact of man's activity on the natural environment, Congress created legislation that recognized the influences that population growth, urbanization, industrial expansion, resource exploitation, and expanding technological advances had on the environment. Further, it noted that restoring and maintaining environmental quality was critical to the welfare of humans. Therefore a goal of NEPA was to create and maintain "conditions under which man and nature can exist in productive harmony."

NEPA, a procedural act in nature, applies to all Federal agencies and requires them to prepare environmental impact statements for major Federal actions that may significantly affect the quality of the human environment. Major Federal actions include the adoption of formal plans or official policies that guide or prescribe alternative uses of Federal resources, upon which future agency actions will be based. Information about the potential environmental consequences of the actions must be made available to decisionmakers and to the public before decisions are made and before actions are taken.

NEPA compliance in the Pacific Northwest has resulted in hundreds of documents analyzing even more potential Federal actions. These documents have addressed site-specific actions, such as hatchery construction or habitat enhancement, as well as program development for watersheds and wildlife. As noted in Chapter 1, many of these documents have been incorporated by reference in this EIS.

The Clean Water Act (1972)

The CWA was passed in 1972 and amended in 1977, with a goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. It authorizes the Administrator of the EPA to take the necessary action to prevent, reduce, or eliminate the pollution of navigable waters and ground waters and improve the sanitary condition of surface and underground waters.

Like the ESA, the CWA is a source of increasing conflict between natural resource use and environmental protection. The Act has resulted in important changes to water

[45] The ESA, CWA, and Regional Act are certainly not the only relevant statutes with respect to this issue. One commenter requested that a similar summary be provided for all statutes affecting fish and wildlife issues; however, we determined that such an exercise would unnecessarily lengthen the EIS, especially given that many resources are readily available to obtain such information. See Appendix B for a listing.

management practices, regulated point-source discharges, and increased funding and management for non-point source pollution. Increasingly, the Act is viewed as a mechanism to obtain ecosystem improvements, particularly to improving temperature and dissolved gas levels in the Columbia and Snake Rivers. Most water quality issues are the result of complex watershed-wide interactions among numerous factors, many of which are not related to the hydropower system. Such issues cannot be addressed solely by changing operations at the dams. Other improvements in water quality are at times in conflict with the needs of endangered species. For example, efforts to reduce total dissolved gas levels for CWA purposes appear to conflict with the direction from NMFS for the Corps to spill more water (an action that increases total dissolved gas levels) for salmonid migration.

Although Federal agencies play a significant role in the Columbia River Basin, states have primary authority to govern water allocation systems within their boundaries. States also play a role in regulating hydroelectric projects throughout the Region under both state and Federal laws. The states of Oregon, Washington, and Idaho are all operating under consent decrees with the EPA to develop total maximum daily load (TMDL) standards. Among the three states, there are over 2,500 water bodies that fail to meet CWA standards (see map Figure 2.7 at the end of this chapter).

In early 2002, Northwest Environmental Advocates announced its intent to sue the Federal EPA because Oregon had not adjusted its water quality standards for toxic chemicals since 1988. Out-of-date standards allegedly affect both the safety of water for humans and the way in which the Oregon Department of Environmental Quality rules on water quality permits. The CWA allows the EPA to delegate enforcement responsibility to the states; however, when states fail to review standards every three years, the EPA must step in and do it for them. This and similar suits that could be brought against other states may compel Federal agencies to take stronger stances as they fulfill their regulatory roles under the CWA.

The Endangered Species Act (1973)

The ESA was passed in an effort to conserve threatened and endangered species. Generally, it authorizes the Secretary of Interior (through USFWS), or the Secretary of Commerce (through NMFS, in the case of anadromous fish and marine species) to determine whether a species is endangered or threatened and to recommend a means to protect it. Thereafter, a Federal agency must consult with the appropriate Federal agency (Interior or Commerce) to ensure that its actions will not jeopardize the continued existence of the listed species. Formal consultations typically conclude with the issuance of a Biological Opinion (BiOp) stating whether the proposed Federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. Should a BiOp reach a jeopardy or adverse modification conclusion, reasonable and prudent alternatives are offered as options to project implementation that would avoid the likelihood of jeopardy to the species or adverse modification of critical habitat.

If a jeopardy opinion containing a reasonable and prudent alternative(s) is issued, the action agency may: (1) adopt the reasonable and prudent alternative(s); (2) not undertake the proposed action; (3) request an exemption from Section 7(a)(2) of ESA; (4) reinitiate consultation based on modification of the proposed action or development of a reasonable and prudent alternative not previously considered; or (5) proceed with the action if it believes, upon review of the BiOp, that such action satisfies Section 7(a)(2).

In the Columbia River Basin, Snake River chinook and sockeye salmon runs were listed under the ESA in the early 1990s. As required under the Act, NMFS developed a BiOp evaluating the effects of Federal agency hydroelectric operations on those runs. Since that time, the FCRPS has been operated in accordance with that BiOp or its successors to ensure compliance with the ESA. These Snake River listings were followed in the mid-1990s with additional listings of anadromous fish stocks by NMFS and listings for Kootenai River white sturgeon and bull trout by USFWS. USFWS had previously listed the northern spotted owl and marbled murrelet.

The requirements of the ESA and the subsequent BiOps, habitat conservation plans, and rules for protecting critical habitat developed by NMFS and USFWS have become the guiding directives for Columbia Basin resource management and development. NMFS administers the Act as it applies to anadromous fish and marine mammals, while the USFWS does so for non-anadromous fish and other wildlife.

Current ESA listings affect the implementation of many laws and policies that allow and regulate natural resource use in the Basin, including legislation that defines BPA, Corps, and Bureau policies; Federal land policies; and international and domestic fishing laws. (See Appendix C for a recent listing of ESA-protected fish and wildlife species in BPA's Service Territory.)

NMFS, through the Habitat Conservation Plans (HCPs), critical habitat designations, and BiOps, is beginning to develop an overall recovery plan strategy for ESA-listed stocks of anadromous fish. Starting with the 2000 Biological Opinion of the FCRPS, NMFS has set survival and recovery goals for the listed fish it oversees. These goals will apply across the landscape to all agencies and all actions upon which NMFS is consulted. NMFS' metrics—measures of progress toward the survival goals—can also be applied to any proposed action. The ESA requires that recovery plans contain (1) objective, measurable goals for delisting; (2) a comprehensive list of the actions necessary to achieve the delisting goals; and (3) an estimate of the cost and time required to carry out those actions. In addition, National Oceanic and Atmospheric Administration (NOAA) Recovery Planning Guidelines suggest that recovery plans include an assessment of the factors that led to population declines and/or that are impeding recovery. Finally, it is important that the plans include a comprehensive monitoring and evaluation program for gauging the effectiveness of recovery measures and overall progress toward recovery.

Recovery goals must, at a minimum, restore listed ESUs (evolutionarily significant units) to levels at which they are no longer threatened and can therefore be delisted under the ESA. Recovery Teams will be formed and will (1) identify population and ESU de-

listing goals; (2) characterize habitat/fish abundance relationships; (3) identify the factors for decline and limiting factors for each ESU; (4) identify the early actions that are important for recovery; (5) identify research, evaluation, and monitoring needs; and (6) serve as science advisors to groups charged with developing measures to achieve recovery. Recovery plans will address all salmonid species within a series of discrete geographic areas, or domains.

The Basinwide Strategy Paper[46] is a recovery strategy that outlines the strategies and specific actions that Federal agencies operating within the Columbia River Basin should take to prevent extinction and foster recovery by improving survival across all life stages of listed anadromous fish ESUs. In addition, the Basinwide Strategy Paper is a blueprint to guide Federal actions and interactions with state and local governments and tribes as they take steps to comply with the ESA and exercise their authorities. BPA expects recovery planning for listed anadromous fish will likely proceed along the lines discussed in the Basinwide Strategy Paper.

The NMFS and USFWS BiOps build on the recommendations in the Basinwide Strategy Paper. Given the 10-year duration of the BiOps and the over 200 specific actions that they call for, the Action Agencies—the Corps, Bureau, and BPA—are committed to preparing Implementation Plans. In 2001, the agencies released and took public comment on the initial draft 1- and rolling 5-year plans.[47] The plans prioritize the specific actions for addressing the needs of listed species at the dams, in spawning and rearing habitats, at the hatcheries, and in managing harvest. The goals of the plans are to assist in meeting the recovery standards for the resident and anadromous fish listed under the ESA in the Columbia Basin; to conserve critical habitat upon which the listed species depend; and, when integrated with the Council's Program, to balance mitigation efforts under the Program with the recovery efforts under the BiOps. The Implementation Plans include provision for rigorous, uniform monitoring, evaluation, and research to track progress toward the targets set for mitigation and recovery. The Action Agencies have begun implementing the initial plans and have also started preparing future plans.

In the 20th century, state and Federal agencies with authority over fish species had increasingly begun looking to methods to manage fish populations, especially as non-native fish were introduced and began to prey on or compete with native species—factors that have contributed to the increased listings of threatened and endangered populations. A variety of methods was brought into play to manage fish populations, including the modification of angling regulations to protect some species or increase harvest of others; physical removal methods such as trapping or electroshocking fish; introduction of predators, explosives; and physical methods of manipulating flow or introducing physical barriers in a given stream.[48] These management techniques have had varied success, depending on the severity of the problem. When complete eradication of a fish species or

[46] Federal Caucus 2000b.

[47] USDOI/ Bureau, Corps, and BPA 2001a and 2001b.

[48] American Fisheries Society 2002, pp. 3-4. See also the discussion under Judicial Impact on Natural Resource Policy in Section 2.3.2.3, later in this document.

of all fish in a body of water appears to be the only management solution, managers have used piscicides (chemical controls) or dewatering. The piscicides typically used are rotenone (a plant-derived chemical that has been tested and used for many decades in the U.S.), or antimycin. Piscicides can be used to remove undesirable fish populations that threaten the genetic purity of desirable strains. Although dewatering is less expensive, it is potentially more environmentally disruptive to an area.[49] All of these options are part of the array of techniques developed over the last 50 years to manage fish populations, originally to support human needs, but increasingly (as in the case of ESA-listed species) to support recovery of threatened ESUs.

In 2001 alone, the Action Agencies took hundreds of actions to further the mitigation and recovery of endangered salmon, steelhead, bull trout, and sturgeon in the Columbia River Basin. These actions represent the start, not the culmination, of their efforts to achieve biological objectives and performance standards under the BiOps. To track their efforts, the Action Agencies prepared a Progress Report. The agencies will prepare such reports annually for the duration of the BiOps. The 2002 report included the following elements:

- a summary of 2001 adult returns and prevailing conditions in the hydrosystem and power markets;
- a discussion of 2001 survival rates of juvenile and adult fish, and summaries of projects and measures implemented for the hydrosystem, habitat, hatcheries, harvest, resident fish, and research, monitoring, and evaluation programs;
- key conclusions and recommendations for more effective actions to achieve performance standards; and
- detailed results of dam passage and estuary research during 2001; a seasonal summary of drought and power emergency developments; and a more expansive list of measures taken in 2001, including a cross-reference to the BiOp Reasonable and Prudent Alternatives (RPAs) that each project targets.

In April 2002, NMFS issued interim estimates of abundance and productivity targets for ESUs of Pacific salmon and steelhead runs in the Columbia River Basin that are listed under the ESA. These targets were developed in support of regional, state, tribal, and local planning efforts and rely on work from earlier planning efforts.

Some wildlife species of the Pacific Northwest have also faced significant declines and subsequent protections under the ESA. These species—including grizzly bear, gray wolf, northern spotted owl, Columbian white-tailed deer, bald eagle, Canada lynx, and the marbled murrelet—have all gained protections under the ESA since its passage in 1973. However, the ESA is not the only protection available to wildlife. Some species also enjoy Federal protections pursuant to the Migratory Bird Treaty Act,[50] the Bald and

[49] American Fisheries Society 2002, pp. 2-3. After treatment, the lakes may then be re-stocked with genetically pure broodstock to preserve the wild strains of fish native to the waters.

[50] Migratory Bird Treaty Act of 1918, 16 U.S.C. §§ 703–711.

Golden Eagle Protection Act,[51] and the Marine Mammal Protection Act[52] (see Appendices B and C).

Wildlife management usually serves two general needs. First, management strategies are implemented to protect and enhance wildlife populations—especially those of protected species. These strategies are usually achieved by protecting, restoring and enhancing habitat. Second, management techniques are often used to control and manage abundant or nuisance wildlife species, especially those that have the ability to impact human activities or desired and protected species. Some frequently used wildlife management techniques include habitat modifications, removal/deterrence (including the changes in hunting regulations for game species [e.g. shooting, trapping, frightening, using repellants]), construction of fences and barriers, and biological and chemical controls (e.g. sterilization, rodenticide).[53]

The Regional Act and Its Influence

The basis for starting this section of the FWIP EIS with the year 1980 was the passage that year of the Pacific Northwest Electric Power Planning and Conservation Act.[54] Concerns over adequate power supplies and fish and wildlife harmed by the hydroelectric system led to passage of the Act, which created the Council, an interstate compact agency, and directed the Council to put fish and wildlife mitigation and enhancement on a par with hydroelectric power generation in the operation of the FCRPS. The Act's goals include the following:

(1) ensuring an adequate, efficient, economical, and reliable power supply, and

(2) protecting, mitigating, and enhancing fish and wildlife harmed by hydroelectric projects.

The Council is responsible for promulgating a Regional Power Plan and a Fish and Wildlife Program. When developing its Fish and Wildlife Program, the Council defers to the recommendations of fish and wildlife managers—agencies and the tribes.

The Regional Act requires the Council to consider certain economic factors in its fish and wildlife decisions. The Fish and Wildlife Program must help assure an adequate, efficient, economical, and reliable power supply for the Region.[55] Fish and wildlife measures must "utilize, where equally effective alternative means of achieving the same sound biological objective exist, the alternative with the minimum economic cost."[56] The Act requires BPA to mitigate fish and wildlife in a manner consistent with the program and the other purposes of the Act. Other Federal agencies must also take the plans into

[51] Bald and Golden Eagle Protection Act, 16 U.S.C. §§ 668–668d.

[52] Marine Mammal Protection Act of 1972, 16 U.S.C. §§ 1361–1407.

[53] See generally, Dolbeer, R.A. et al. 1994.

[54] 16 U.S.C. §§ 839 to 839h; commonly referred to within the region as the Regional Act.

[55] 16 U.S.C. § 839b(h)(5).

[56] 16 U.S.C. § 839b(h)(6)(C).

account to the fullest extent practicable.[57] The Council, however, has no authority over the Federal agencies that implement the program.

The Regional Act includes a duty for Federal agencies that manage, operate, or regulate hydroelectric facilities in the Basin to provide "equitable treatment" for fish and wildlife with the other purposes for which the hydro facilities are managed and operated. The Council describes equitable treatment as "meet[ing] the needs of salmon with a level of certainty comparable to that accorded the other operational purposes."[58] BPA provides equitable treatment primarily by implementing all or part of the Council's Program and taking action to meet the terms of relevant BiOps. The Ninth Circuit Court has upheld BPA's interpretation, holding that it is reasonable to balance power needs and mitigation needs on a system-wide basis.[59]

From 1998-2001, BPA spent over $200 million dollars annually for hundreds of measures throughout the Region to help both anadromous fish, such as salmon and steelhead, resident fish, such as bull trout and sturgeon, and wildlife.[60] These projects include habitat restoration, hatcheries, monitoring and evaluation, fish screens and ladders at dams, education and training, water and vegetation management, predator control and research. BPA works in partnership on many projects with state and Federal agencies, Indian tribes, and non-government entities. In addition, BPA incurred additional costs to manage the FCRPS to benefit both listed and unlisted fish, resident and anadromous. These costs fluctuated with water conditions and power markets. A portion of this money is the value of foregone revenues, while the bulk is actually spent for power purchases to replace energy that could not be generated when fish operations took precedence over power.[61] For example, in 2000 BPA spent approximately $340 million on fish operations—about $270 million in foregone revenue. In 2001, fish operations required BPA to incur over $1.5 billion in costs—about$115 million in foregone revenues and the balance in replacement power costs.[62]

BPA also mitigates and improves wildlife habitat lost or disturbed as a result of FCRPS development and operation. This effort includes purchases to protect and enhance thousands of acres of habitat throughout the Northwest. Again, BPA works with other agencies, tribes and local interest groups, many of whom manage the habitat that BPA purchases. BPA also has set up trust-like agreements with states and tribes to facilitate wildlife habitat protection.[63]

BPA has taken many substantive actions to ensure that fish and wildlife receive equitable treatment with the other purposes for which the FCRPS is managed. Some equitable

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[57] 16 U.S.C. § 839b(h)(11)(A)(ii).

[58] Council 1992, Vol. II. p. 9.

[59] *Northwest Environmental Defense Center v. BPA*, 117 F.3d 1520, 1533-34 (1997).

[60] See Section 2.3.2.3 Current Policies—Conflicting Priorities; Managing the Money Resources.

[61] USDOE/BPA 2002g.

[62] Council 2002, p. 21.

[63] USDOE/BPA 2002g.

treatment actions are direct efforts to improve the environment for fish and wildlife, many of which are system-wide, including:

- The Water Budget – Discharge of water from storage projects to increase spring and summer flows for juvenile fish migration.
- Interim Flow Improvements – meeting flow targets by operating Federal storage projects to achieve flood control elevations by mid-April, and drafting those projects through the summer to minimum specified levels.
- Long-Term Spill Agreement – to help juvenile salmon and steelhead migrating from their spawning grounds to the ocean.
- Vernita Bar Agreement – providing certain flow levels from fall to spring to protect salmon spawning and hatching at Vernita Bar below Priest Rapids Dam.
- Non-Treaty Storage Fish Agreement – coordinating the use of 4.5 MAF of water storage behind Mica Dam in British Columbia.
- Managed Wildlife Habitat at Projects – much of the land within and adjacent to Federal project boundaries is designated and managed as wildlife habitat.

Discussions identifying some of those actions are found in Section 2.3.2.3, Judicial Impact on Natural Resource Policy. Other equitable treatment efforts include those that manage mitigation and recovery implementation in the same manner as BPA treats its other FCRPS management duties. Often such actions are business- or process-oriented, but they are critical to ensuring a reliably funded, cost-effective, biologically successful effort in a market-driven power marketing environment. Although the responsibility to provide equitable treatment applies specifically to management of the FCRPS, BPA has used its authority to take discretionary actions that extend beyond this limited obligation. A summary of some business-oriented actions that go beyond FCRPS management to help provide certainty for fish and wildlife comparable to other FCRPS purposes (and thus equitable treatment) includes the following:

- 1995 Reorientation of BPA Fish and Wildlife Program. In the 1995 Business Plan Final EIS Record of Decision, BPA decided that "[u]nder the Market-Driven alternative, BPA is reinventing its fish and wildlife program to emphasize better results, effectiveness, and efficiency. The program will be reoriented to establish priorities, provide stable funding, monitor results, and focus on ecosystem management."[64]
- Examining mitigation and recovery needs in ratemaking processes and setting rates accordingly. BPA's 2000 rate case included a range of fish and wildlife costs to ensure that BPA met its mitigation and recovery obligations under a number of potential scenarios.
- Integrating fish and wildlife mitigation and recovery efforts in an overall unified plan that combines ESA, CWA, Indian treaty and trust responsibilities, and Regional Act mandates. BPA has worked with the Corps and the Bureau to create

[64] USDOE/BPA 1995b, p. 12.

Implementation Plans to prioritize and organize execution of the over 200 actions called for in the NMFS and USFWS BiOps. Simultaneously, BPA funds and participates in Provincial Reviews under the Council's Program to help unify its efforts.[65] Other statutory requirements, such as those under the National Historic Preservation Act, become part of the planning process as necessary, sometimes at the action implementation level.

- In December 2001 BPA announced in intended to continue aggregating BPA fish and wildlife spending estimates for mitigation and recovery planning purposes, including the capital costs of ESA offsite recovery and Council Program mitigation. However, as BPA's financial condition continued its unanticipated deterioration through 2002, BPA has signaled the likely need to cut costs in all of its program areas, including fish and wildlife. The results of the Financial Choices process and the changes to BPA's fish and wildlife spending estimates were not available at the time of completion of this EIS.[66]
- BPA's entering into direct funding agreements to expedite both capital and operational mitigation and recovery actions at Corps, Bureau, and USFWS projects and facilities. These agreements allow these agencies to accept funding directly from BPA, so that they do not have to wait for appropriations for costs allocated to the power purpose of a dam.
- Spreading the costs of fish and wildlife mitigation throughout the FCRPS on a system-wide basis using the Section 4(h)(10)(C) financial crediting processes.[67] This helps achieve mitigation more quickly and diversely than would project-by-project 4(h)(10)(C) cost allocations. Wildlife especially have benefited because BPA has undertaken full mitigation where the power share of a dam's costs is nominal and decades have passed without appropriations being authorized for wildlife mitigation.
- Preparing NEPA analysis programmatically for watershed and wildlife projects. This action provides a broad overview of potential environmental impacts as well as standardizing and streamlining the NEPA compliance process.
- Developing a fish and wildlife policy manual that identifies what provisions will be in mitigation and recovery contracts and how BPA will administer them. By standardizing contractors' obligations and BPA's processes, BPA is attempting to guide implementation of projects in a consistent, standardized manner across the Basin regardless of the contractor. An independent auditor's report on the Program recommended this action.[68]

These examples, as well as those elsewhere in this chapter, show how BPA has embraced its fish and wildlife responsibilities and placed them on par with its power-marketing obligations in just 20 years since the Regional Act became law. BPA has engaged fish

[65] USDOE/BPA 2001f.

[66] See Section 2.3.2.3 Current Policies—Conflicting Priorities; Managing the Money Resources.

[67] 16 U.S.C. § 839b(h)(10)(C).

[68] Moss-Adams LLP 1997, pp. 19-24.

and wildlife comprehensively, funding and implementing numerous fish and wildlife projects throughout the Region (see map Figure 2.14 at the end of this chapter illustrating BPA Fish and Wildlife Projects by Subbasin and Appendix H). In order to achieve its fish and wildlife goals, BPA created a permanent professional staff of nearly 100 biologists, engineers, planners, hydrologists, economists, contracting officers, support staff, and lawyers; a fish and wildlife division; and a senior policy advisor reporting directly to the Administrator. Dozens of other employees and contractors assist them in a temporary or part-time capacity. By managing the FCRPS for fish and wildlife mitigation and recovery —in a programmatic, systematic, market-driven manner—BPA provides equitable treatment for fish and wildlife.

National Environmental Policy Act Analyses Related to the Regional Act

The combination of the Regional Act, NEPA, and applicable environmental statutes caused a rapid increase in environmental analyses. In 1992, the Bureau, Corps and BPA prepared the *Columbia River Salmon Flow Measures Options Analysis EIS*. This EIS considered alternative actions at projects on the lower Snake and Columbia rivers to improve juvenile and adult salmon migration conditions. Next, the agencies prepared and issued the *Interim Columbia and Snake River Flow Improvement Measures for Salmon Supplemental EIS* to address water management activities to be implemented in 1993 and subsequent years. In 1995, the Bureau, Corps, and BPA issued the *System Operation Review (SOR) EIS*, which focused narrowly on long-term river management alternatives. In 2002, the Corps issued its *Lower Snake River Juvenile Salmon Migration Feasibility Report EIS.*[69]

The SOR was initiated in 1990 by the Bureau, Corps, and BPA to review multi-purpose management of the Columbia-Snake River system, and to provide a strategy for system operations. The review started as a long-term study of system operations at Federal projects on the Columbia River and its tributaries, and became intertwined with activities taking place in the Basin for salmon recovery. Its focus then shifted to the role that hydrosystem operations could play in salmon recovery. When the SOR was completed, three salmon ESUs were listed in the Region.

The SOR provides detailed analyses of the environmental effects associated with changes in river operations. However, its scope was limited to analyzing the effects of long-term river management of hydro operations. Studies beyond its scope (e.g. structural modifications) were not considered in the SOR.[70] While individual structural modifications were not considered, system operations feasible only with those structural modifications were considered in the system operation strategies. Structural measures dismissed from detailed study in the SOR included actions such as modifying fish ladders; installing juvenile bypass facilities; installing fish screens at dams and over irrigation diversion outlets; and modifying recreational facilities to allow their use over a wider range of operating conditions.

[69] A Record of Decision was issued in September 2002. Corps 2002c.

[70] USDOE/BPA, Corps, and Bureau 1995, p. 10-1.

Structural modifications suggested but not pursued in the SOR, were part of the Corps' System Configuration Study initiated in 1991. This study evaluated major structural modifications at some of the major Federal projects. This study was divided into two phases, the second phase containing several studies including the Lower Snake River Juvenile Salmon Migration Feasibility Study.

The Lower Snake River Juvenile Salmon Migration Feasibility Study, which began in 1994, evaluated the technical, environmental, social and economic effect of potential modifications to the four lower Snake River dams in order to increase the survival of migrating juvenile salmon. This study resulted in the *Lower Snake River Juvenile Salmon Migration Feasibility Report EIS.* The EIS evaluated four alternatives that included: existing system, maximum transport of juvenile salmon, major system improvements, and dam breaching. This EIS was used as a resource document for the FWIP EIS when evaluating hydrosystem modifications, including breaching or drawing down the four lower Snake River dams.

The SOR also did not specifically address non-project measures. Many of these measures emphasized fish and wildlife concerns that had been under consideration in the Region for a decade or more. Some of these measures had been or would be implemented through the Council's program or through ESA requirements. Measures included improving streams and watersheds to restore salmonid spawning and rearing habitat; preserving and enlarging wildlife habitat; and expanding research on hatchery programs and preservation of native fish stocks, and improving hatchery operations.[71]

The SOR EIS noted that actions outside its limited scope (e.g., harvest, hatchery practices, and habitat) would likely require additional NEPA documentation. This FWIP EIS delivers on the assurances provided in the SOR EIS. However, the FWIP should not be interpreted as superseding the SOR. The SOR, including its analyses, is an important source document for this FWIP EIS and remains an important resource for the Region.

Since the SOR EIS was issued (1995), the Snake River wild steelhead, and nine populations of salmon and steelhead in Washington and Oregon have been added to the endangered species list. Consequently, additional and broader efforts were launched in the late 1990s, including the Framework process and the Conceptual Plan/Basinwide Strategy ("All H") process by the Federal Caucus (see Section 2.3.2.4).

2.3.2.2 Other Federal Agencies and General Statutory Responsibilities

The previous discussions describe BPA's responsibilities under the ESA, the CWA, NEPA, and the Regional Act. Equally important regionally, are the other Federal agencies that also have significant statutory responsibilities that bear upon the use of hydro resources for power, and on the responsibilities to administer and protect other resources of the Pacific Northwest. Over time, their roles and their priorities have changed to reflect new information and new policies.

[71] USDOE/BPA, Corps, and Bureau 1995, pp. 4-23 to 4-25.